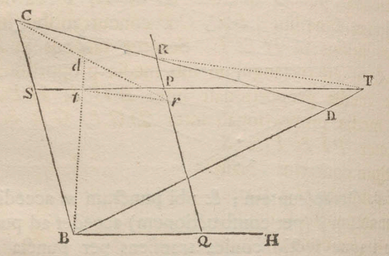
De Motu Corporum

capiendo ſemper $p\,e$ æqualem $\mathcal{P}\,r$; & agendo rectas $B\,e$, $C\,r$ concurrentes in d. Nam cum ſint $\mathcal{P}\,r$ ad $\mathcal{P}\,t$, $\mathcal{P}\,R$ ad $\mathcal{P}\,T$, $p\,B$ ad $\mathcal{P}\,B$, $p\,e$ ad $\mathcal{P}\,t$ in eadem ratione; erunt $p\,e$ & $\mathcal{P}\,r$ ſemper æquales. Hac methodo puncta trajectoriæ inveniuntur expeditiſſime, niſi mavis curvam, ut in conſtructione ſecunda, deſcribere mechanice.

PROPOSITIO XXIII. PROBLEMA XV.

Trajectoriam deſcribere, quæ per data quatuor puncta tranſibit, & rectam continget poſitione datam.

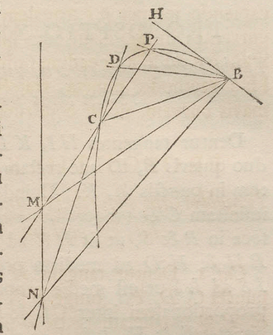
Caſ. 1. Dentur tangens $H\,B$, punctum contactus B, & alia tria puncta C, $\mathcal{D}$, $\mathcal{P}$. Junge $B\,C$, & agendo $\mathcal{P}\,S$ parallelam rectæ $B\,H$ & $\mathcal{P}\,\mathcal{Q}$ parallelam rectæ $B\,C$, comple parallelogrammum $B\,S\,\mathcal{P}\,\mathcal{Q}$. Age $B\,\mathcal{D}$ ſecantem $S\,\mathcal{P}$ in $\mathcal{T}$, & $C\,\mathcal{D}$ ſecantem $\mathcal{P}\,\mathcal{Q}$ in R. Deinde, agendo quamvis $t\,r$ ipſi $\mathcal{T}\,R$ parallelam, de $\mathcal{P}\,\mathcal{Q}$, $\mathcal{P}\,S$ abſcinde $\mathcal{P}\,r$, $\mathcal{P}\,t$ ipſis $\mathcal{P}\,R$, $\mathcal{P}\,T$ proportionales reſpective; & actarum $C\,r$, $B\,t$ concurſus d (per lem. xx.) incidet ſemper in trajectoriam deſcribendam.



Idem aliter.

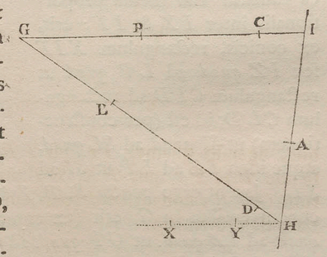
Revolvatur tum angulus magnitudine datus $C\,B\,H$ circa polum B, tum radius quilibet rectilineus & utrinque productus $\mathcal{D}\,C$ circa polum C. Notentur puncta M, N, in quibus anguli crus $B\,C$ ſecat radium illum, ubi crus alterum $B\,H$ concurrit cum eodem radio in punctis $\mathcal{P}$ & $\mathcal{D}$. Deinde ad actam infinitam $M\,N$ concurrant perpetuo radius ille $C\,\mathcal{P}$ vel $C\,\mathcal{D}$ & anguli crus $B\,C$, & cruris alterius $B\,H$ concurſus cum radio delineabit trajectoriam quæſitam.

Liber Primus.



Nam ſi in conſtructionibus problematis ſuperioris accedat punctum A ad punctum B, lineæ $C\,A$ & $C\,B$ coincident, & linea $A\,B$ in ultimo ſuo ſitu fiet tangens $B\,H$; atque ideo conſtructiones ibi poſitæ evadent eædem cum conſtructionibus hic deſcriptis. Delineabit igitur cruris $B\,H$ concurſus cum radio ſectionem conicam per puncta C, $\mathcal{D}$, $\mathcal{P}$ tranſeuntem, & rectam $B\,H$ tangentem in puncto B. $\mathcal{Q}.\,E.\,F.$

Caſ. 2. Dentur puncta quatuor B, C, $\mathcal{D}$, $\mathcal{P}$ extra tangentem $H\,I$ ſita. Junge bina lineis $B\,\mathcal{D}$, $C\,\mathcal{P}$ concurrentibus in G, tangentique occurrentibus in H & I. Secetur tangens in A, ita ut ſit $H\,A$ ad $I\,A$, ut eſt rectangulum ſub media proportionali inter $C\,G$ & $G\,\mathcal{P}$ & media proportionali inter $B\,H$ & $H\,\mathcal{D}$, ad rectangulum ſub media proportionali inter $\mathcal{D}\,G$ & $G\,B$ & media proportionali inter $\mathcal{P}\,I$ & $I\,C$; & erit A punctum contactus. Nam ſi rectæ $\mathcal{P}\,I$ parallela $H\,X$ trajectoriam ſecet in punctis quibuſvis X & $\mathcal{Y}$: erit (ex conicis) punctum A ita locandum, ut fuerit $H\,A\,quad.$ ad $A\,I\,quad.$ in ratione compoſita ex ratione rectanguli $X\,H\,\mathcal{Y}$ ad rectangulum $B\,H\,\mathcal{D}$, ſeu rectanguli $C\,G\,\mathcal{P}$ ad rectangulum $\mathcal{D}\,G\,B$, & ex ratione rectanguli $B\,H\,\mathcal{D}$ ad rectangulum $\mathcal{P}\,I\,C$. Invento autem contactus puncto A, deſcribetur trajectoria ut in caſu primo. $\mathcal{Q}.\,E.\,F.$



Capi autem poteſt punctum A vel inter puncta H & I, vel extra; & perinde trajectoria dupliciter deſcribi.

PROPO-

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